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622.34 Hazardous Mine
L3hmo gm Opening Project,
1989 Phase 23

Chen Northern, Inc.

FINAL REPORT

HAZARDOUS MINE OPENING PROJECT, PHASE 23
GRANITE AND MISSOULA COUNTIES, MONTANA
Mont. A/E 88-46-113

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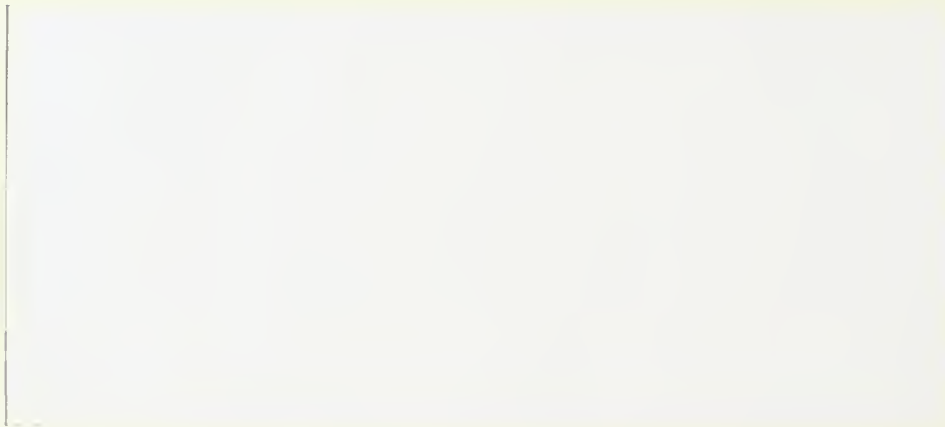
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FINAL REPORT

HAZARDOUS MINE OPENING PROJECT PHASE 23
GRANITE AND MISSOULA COUNTIES, MONTANA
Mont. A/E 88-46-113

Prepared for:

State of Montana
Department of State Lands
Abandoned Mine Reclamation Bureau
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November 4, 1989

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I. INTRODUCTION

1.1 OVERVIEW

Hard rock mining has taken place in Montana since 1862 and was essentially unregulated from a reclamation standpoint for over one hundred years. This resulted in thousands of hazardous shafts and adits in mining districts across the state. The hazards associated with these mine openings are many and range from bad air to falling rock and cave-ins.

1.2 PROJECT OBJECTIVES

The Phase 23 Hazardous Mine Opening Project was undertaken to eliminate the public safety hazards resulting from unreclaimed mine openings in Granite and Missoula Counties, Montana. Closure of dangerous shafts and adits through backfilling, accessing bulkheads and/or fencing was accomplished to eliminate accidental or unauthorized entry.

1.3 PROJECT LOCATION

The project covered twenty-one sites in four mining districts. Legal descriptions are listed in Table 1 and locations are shown on the vicinity maps contained in Appendix A.

1.4 HISTORY

Mining in Montana began in the early 1860's with several years of placer mining preceding the discovery of load deposits in most districts. The levels of mining activity fluctuated until 1905 when many of the mines were abandoned. Present activity includes limited mining and exploration.

The following narrative briefly describes mining history in districts involved in the Phase 23 Hazardous Mine Opening Project.

ALPS MINING DISTRICT, GRANITE COUNTY - No historical data or production records are available for the Alps District.

GARNET MINING DISTRICT, GRANITE COUNTY - Gold was found at Garnet in First Chance Gulch in 1865 and was recovered mostly through placer mining. Around 1867 miners discovered three main veins and the Grant and Hartford and Shamrock lodes began production. Within a short time fifty mines were active in the district producing gold and small amounts of silver, copper and lead.

TABLE 1
PHASE 23 PROJECT LOCATIONS

PA #	COUNTY	DISTRICT	SITE NAME	LEGAL DESCRIPTION
20-065	Granite	Alps	Alps	T10N R16W S26 NE SW
20-092	Granite	Alps	Hidden Treasure	T10N R16W S27 SW SE
20-079	Granite	Alps	NE Section 27	T10N R16W S27 NE NE
20-082	Granite	Alps	SW Section 23	T10N R16W S23 NW SW
20-130	Granite	Garnet	Austin	T12N R14W S02 SW NW
20-141	Granite	Garnet	Grant and Hartford	T12N R14W S03 NE SE
20-099	Granite	Garnet	Herzer & Green	T12N R14W S11 NW NE
20-135	Granite	Garnet	Magone and Anderson	T12N R14W S03 SE SE
39-029	Granite	Garnet	Mountain	T12N R13W S08 NW NW
20-037	Granite	Garnet	Mountain View	T12N R14W S02 NW SW
20-152	Granite	Garnet	Peggy Ann	T12N R14W S04 NE NE
20-038	Granite	Garnet	Shamrock	T12N R13W S03 SW NE
32-013	Missoula	Clinton	Cape Nome	T12N R16W S18 SE SE
32-015	Missoula	Clinton	Cascade	T12N R16W S19 SE NW
32-012	Missoula	Clinton	Hidden Treasure	T12N R16W S19 NW SW
32-024	Missoula	Clinton	Martha	T12N R17W S24 NE NE
32-026	Missoula	Clinton	North Point	T12N R17W S24 SE NE
32-025	Missoula	Clinton	Triangle	T12N R17W S13 SE SE
32-021	Missoula	Potomac	Charcoal	T12N R16W S10 NW NE
32-018	Missoula	Cramer Creek	Chloride	T12N R15W S17 SW SE
32-017	Missoula	Cramer Creek	Linton	T12N R15W S30 NW SW
32-002	Missoula	Cramer Creek	West Fk Cramer Crk	T12N R16W S27 NE SW

During the 1880's, there were a thousand men in Garnet, but the real boom came in the 1890's when the big companies came in and consolidated some of the best properties. Among these were the Magone and Anderson, Nancy Hanks, and the Grant and Hartford. By 1896 there were two stamp mills in the district. Between 1897 and 1917, the mines produced \$950,000 of which ninety-five percent was gold.

Today, mining has resumed in the district. Garnet Mining Corporation began transporting mine dumps to Philipsburg for processing in 1988 with plans to develop and further expand mining in the future.

CLINTON & POTOMAC MINING DISTRICTS, MISSOULA COUNTY - The Hidden Treasure Mine was the most profitable mine in the Clinton District. It was discovered in 1889 and had several periods of development and production through 1948. The upper extension of this mine, the Cascade was developed under a lease between 1935 and 1936. Several shipments of copper ore were made as late as 1921 from the Cape Nome Mine which was discovered in 1887. The Triangle mine was also developed extensively prior to 1912.

In the Potomac District, the Charcoal Mine yielded \$15,000 in lead and silver.

CRAMER CREEK MINING DISTRICT, MISSOULA COUNTY - The Linton Mine opened in 1947 shortly after which a 500 ton sink-float plant was erected on the property. The mine and mill were closed down in 1953. A few shipments of ore were produced from the Chloride Mine which was a lead-silver deposit.

1.5 SITE DESCRIPTION AND PROBLEMS

The sites included in this project are located in or near residential areas, historic sites, close to public roads or in recreation areas. All mine openings threatened public safety. The shafts involved were deep enough to prevent unaided escape upon entry. Adits were obstructed or fitted with accessing bulkheads to protect the curious from unsuspected dangers.

2.0 DESCRIPTION OF PROJECT RECLAMATION

2.1 PROJECT PLANNING

Backfill was recommended for all mine openings to permanently eliminate the hazards. However, many landowners refused to allow backfill and accessing bulkheads or fencing were installed. These techniques do accomplish the goals of preventing accidental entry, but are semi-permanent in nature and are subject to vandalism.

Addendum No.1 was issued prior to bidding the Phase 23 Project to revise the landowner list and address changes in reclamation as dictated by new conditions at several sites. A copy of Addendum No. 1 is included in Appendix B.

The standard steel grate system used as a shaft closure was fabricated by an independent contractor; Lewis D. Morris, 1814 Wilder, Helena, MT. The grate was available for transport to Phase 23 Project sites at the start of the project. This arrangement resulted in cost savings and eliminated the need for additional contract time (which would have been necessary if grate fabrication was the responsibility of the construction contractor). The following is a list of grate sizes, fabrication costs, and prices per square foot.

<u>Size</u>	<u>Cost</u>	<u>Price/Sq.Ft.</u>
16 x 16	1050.00	4.10

2.2 CHRONOLOGICAL HISTORY

Pre-Bid Conference:	September 6, 1988
Bid Opening:	September 15, 1988
Contract Award:	September 20, 1988
Contract Awarded To:	

Johnson Construction
3603 Lost Creek Road
Anaconda, Montana 59711

Pre-Construction Meeting:	October 20, 1988
Began Work:	October 24, 1988
Project Completed:	August 17, 1989

2.3 EQUIPMENT

Case 680E Backhoe
Ford Dump Truck and Trailer
Penjar Gas Powered Drill

2.4 CONSTRUCTION OPERATIONS

The contractor performed the following:

1. Backfilled 17 adits and shafts with 600.6 c.y. of material
2. Installed 1 adit door
3. Installed 3 culverts with locking hatches
4. Installed 11 cable net barriers
5. Installed 1 steel grate system
6. Fabricated and installed 1 steel grate system
6. Installed 1320 L.F. of farm fence and 15 hazard signs
7. Revegetated all areas disturbed by construction activities

3.0 COST SUMMARY

3.1 FINAL PAYMENT REQUEST

A copy of the Final Payment Request is contained in Appendix B. That document contains the final quantities and costs for each work item.

3.2 CHANGE ORDERS

A total of three Change Orders were executed during the course of the project for a total net change in contract price of (+) \$2,073.20. This represents 5% of the project total. Copies of the Change Orders are also included in Appendix B.

3.3 COST PER DISTRICT

Table 2 details the work performed (with measured quantities) for each mine opening included in the Phase 23 Project. Below are the totals for each Mining District and the completed Project.

Alps Mining District	\$ 7,797.20
Garnet Mining District	\$ 11,145.00
Clinton/Potomac Mining District	\$ 10,401.00
Cramer Creek Mining District	\$ 3,330.00
Mobilization	\$ 3,000.00
Miscellaneous Site Work	\$ 8,500.00

Phase 23 Project Total	\$ 44,173.20

3.4 PROFESSIONAL SERVICE FEES

Services provided by Chen-Northern, Inc. include landowner consent, budget preparation, grant application, weed board approval, basic engineering, construction staking, construction contract administration, quantity accounting and full time resident inspection. The relatively small project size enabled the contractor to perform the work with a small crew and minor equipment. This resulted in a small quantity of work performed per day and consequently higher inspection costs. Work was performed during two construction seasons. An analysis of these fees in relation to the Total Project Cost is included as Figure 1.

Table 2
PHASE 23 QUANTITIES AND COSTS

DISTRICT	SITE	#	SPECIFIED	CONSTRUCTED	C.Y.	L.F.	SIGNS	COST	*
Alps	Alps	1	Cable Net	Cable Net				1200.00	
Alps	Alps	2	Cable Net	Cable Net				1200.00	
Alps	Alps	3	Sign	Sign			1	10.00	
Alps	Alps	6	-	Cable Net				1200.00	*
Alps	Hidden Treasure	4	Grate	Grate				1787.20	*
Alps	NE Section 27	7	-	Cable Net				1200.00	*
Alps	SW Section 23	5	Cable Net	Cable Net				1200.00	
Alps	Total						1	\$ 7,797.20	
Garnet	Austin	3	Backfill	Backfill	35.5			355.00	
Garnet	Austin	4	Backfill	Backfill	64			640.00	
Garnet	Austin	5	Backfill	Backfill	100			1000.00	
Garnet	Grant & Hartford	20	Cable Net	Cable Net				1200.00	
Garnet	Herzer & Green	22	Backfill	Backfill	13.8			138.00	
Garnet	Magone & Anderson	28	Culvert	Culvert				1000.00	
Garnet	Magone & Anderson	29	Backfill	Backfill	28.4			284.00	
Garnet	Magone & Anderson	29A	-	Backfill	73			730.00	*
Garnet	Mountain	30	Grate	Fence		132	3	558.00	
Garnet	Mountain View	31	Culvert	Culvert				1000.00	
Garnet	Mountain View	32	Cable Net	Cable Net				1200.00	
Garnet	Mountain View	33	Cable Net	Cable Net				1200.00	
Garnet	Peggy Ann	35	Culvert	Culvert				1000.00	
Garnet	Shamrock	39	Backfill	-	-			-	
Garnet	Shamrock	40	Backfill	Backfill	5			50.00	
Garnet	Shamrock	41	Backfill	Backfill	5			50.00	
Garnet	Shamrock	42	Backfill	Backfill	37			370.00	
Garnet	Shamrock	43	Backfill	Backfill	27			270.00	
Garnet	Shamrock	44	Backfill	Backfill	5			50.00	
Garnet	Shamrock	45	Backfill	Backfill	5			50.00	
Garnet	Willie	47	Backfill	-	-			-	
Garnet	Total				398.70	132	3	\$11,145.00	

* Denotes work performed as change order

Table 2 (continued)

DISTRICT	SITE	#	SPECIFIED	CONSTRUCTED	C.Y.	L.F.	SIGNS	COST	*
Clinton/Potomac	Cape Nome	1	Cable Net	Adit Door				1200.00	*
Clinton/Potomac	Cascade	2	Culvert	Backfill	55.5			555.00	
Clinton/Potomac	Cascade	3	Guard Rail	-				-	
Clinton/Potomac	Cascade	15	Backfill	Backfill	17.7			177.00	
Clinton/Potomac	Charcoal	4	Backfill	Backfill	88.7			887.00	
Clinton/Potomac	Hidden Treasure	5	Backfill	Backfill	5			50.00	
Clinton/Potomac	Hidden Treasure	6	Lock	Lock				-	
Clinton/Potomac	Hidden Treasure	7-11	Fence	Fence		963	8	3852.00	
Clinton/Potomac	Martha	12	Cable Net	Cable Net				1200.00	
Clinton/Potomac	North Point	13	Cable Net	Cable Net				1200.00	
Clinton/Potomac	Triangle	14	Cable Net	Cable Net				1200.00	
Clinton/Potomac	Total				166.9	963	8	\$10,401.00	
Cramer Creek	Chloride	3	Grate	Grate				2050.00	
Cramer Creek	Linton	4	Fence	Fence		142	2	588.00	*
Cramer Creek	Linton	5	Fence	Fence		83	1	342.00	*
Cramer Creek	Linton	6	Cable Net	-				-	
Cramer Creek	Linton	7	Cable Net	-				-	
Cramer Creek	Linton	8	Cable Net	-				-	
Cramer Creek	Linton	9	Cable Net	-				-	
Cramer Creek	W Fk Cramer Crk	2	-	Backfill	35			350.00	*
Cramer Creek	Total				35	225	3	\$ 3,330.00	
Mobilization								3,000.00	
Misc. Site Work								8,500.00	
Total Project					600.6	1320	15	\$44,173.20	

* Denotes work performed as change order

Figure 1

ANALYSIS OF PROFESSIONAL SERVICE FEES
HAZARDOUS MINE OPENING PROJECT - PHASE 23

DESIGN COSTS - Grant Preparation, Site Evaluation, Engineering and Bid Documents	\$ 4,107.62
INSPECTION COSTS - Construction Administration, Construction Inspection and Final Report	\$ 19,184.48

CHEN-NORTHERN COSTS	\$ 23,292.10
STEEL GRATE FABRICATION COSTS	\$ 1,050.00
CONTRACTORS CONSTRUCTION COSTS	\$ 43,123.20

TOTAL PHASE 23 CONSTRUCTION COSTS	\$ 44,173.20

PERCENTAGE ANALYSIS

Chen-Northern Design Cost/Total Construction Cost	9.3 %
Chen-Northern Inspection Cost/Total Construction Cost	43.4 %
Total Chen-Northern Cost/Total Construction Cost	52.7 %

4.0 SUMMARY

4.1 COMPLETED RECLAMATION

The original Phase 23 contract specified reclamation consisting of 3 steel grates, 4 culverts, 14 cable nets, 6 fence sites and backfilling 16 openings. The actual work constructed amounted to installing 2 steel grates, 3 culverts, 11 cable nets, erecting fencing to enclose 7 openings and 17 backfills. A total of 4 new openings were included in the project and 7 of the original openings were deleted.

Several new openings found during the course of construction were added to the Project and others were deleted due to changed field conditions since the time of inventory. Other changes resulted from directives issued by new owners or lessees and unsafe construction conditions.

The project resulted in the complete obstruction of some adits and shafts with access to others limited through the installation of doors, grates, culverts, cable nets or fences. Hazard signs were installed where appropriate. Revegetation of disturbed areas was accomplished.

The contractor completed the work as specified within the time allowed.

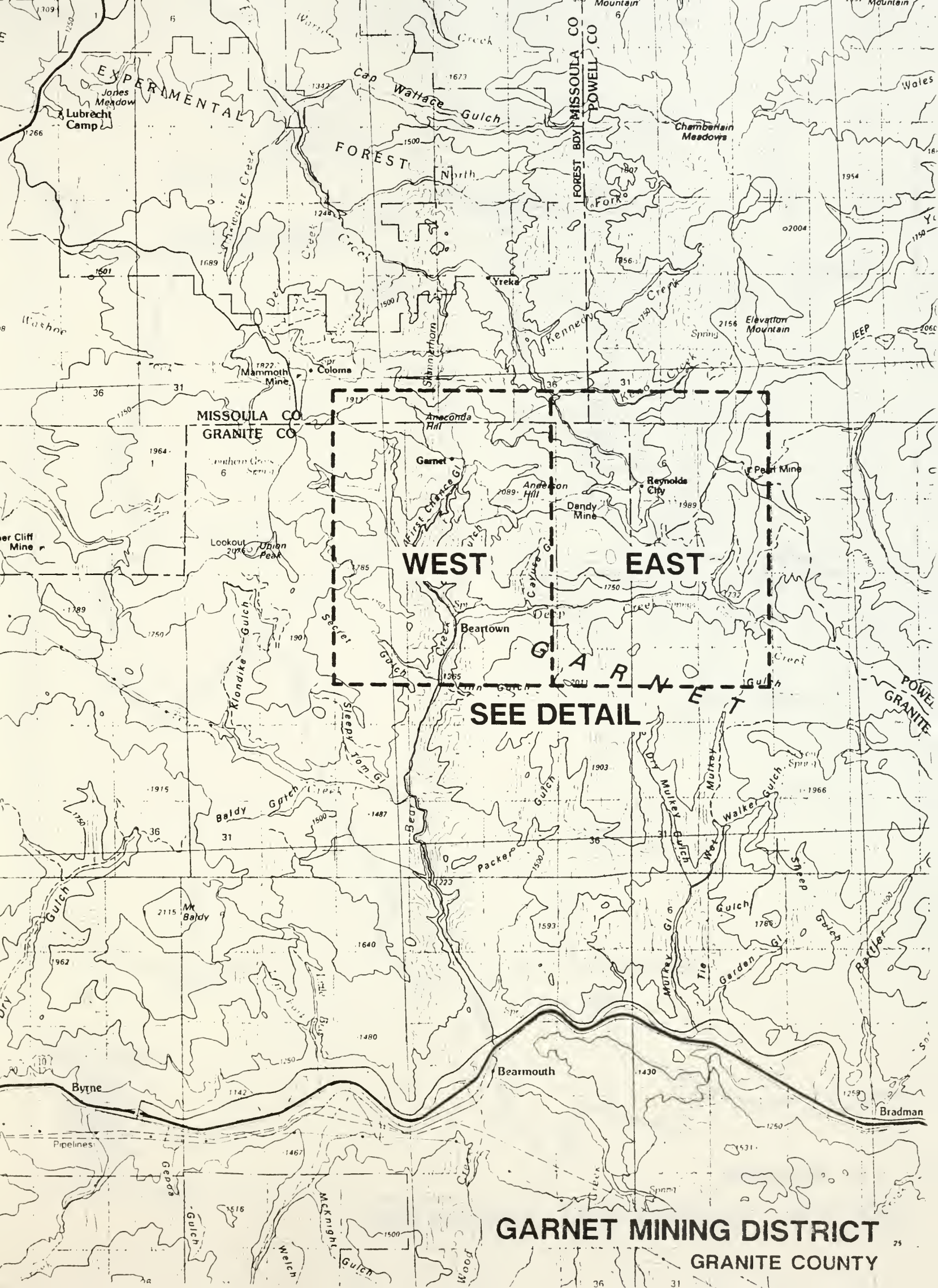
4.2 COMMENTS

The bulkhead closures installed may protect against unauthorized entry for many years. Periodic monitoring will be required to verify the condition of all mine openings included in the Phase 23 Project to assure against subsidence, vandalism and damage due to natural causes. Revegetation efforts should be monitored for success.

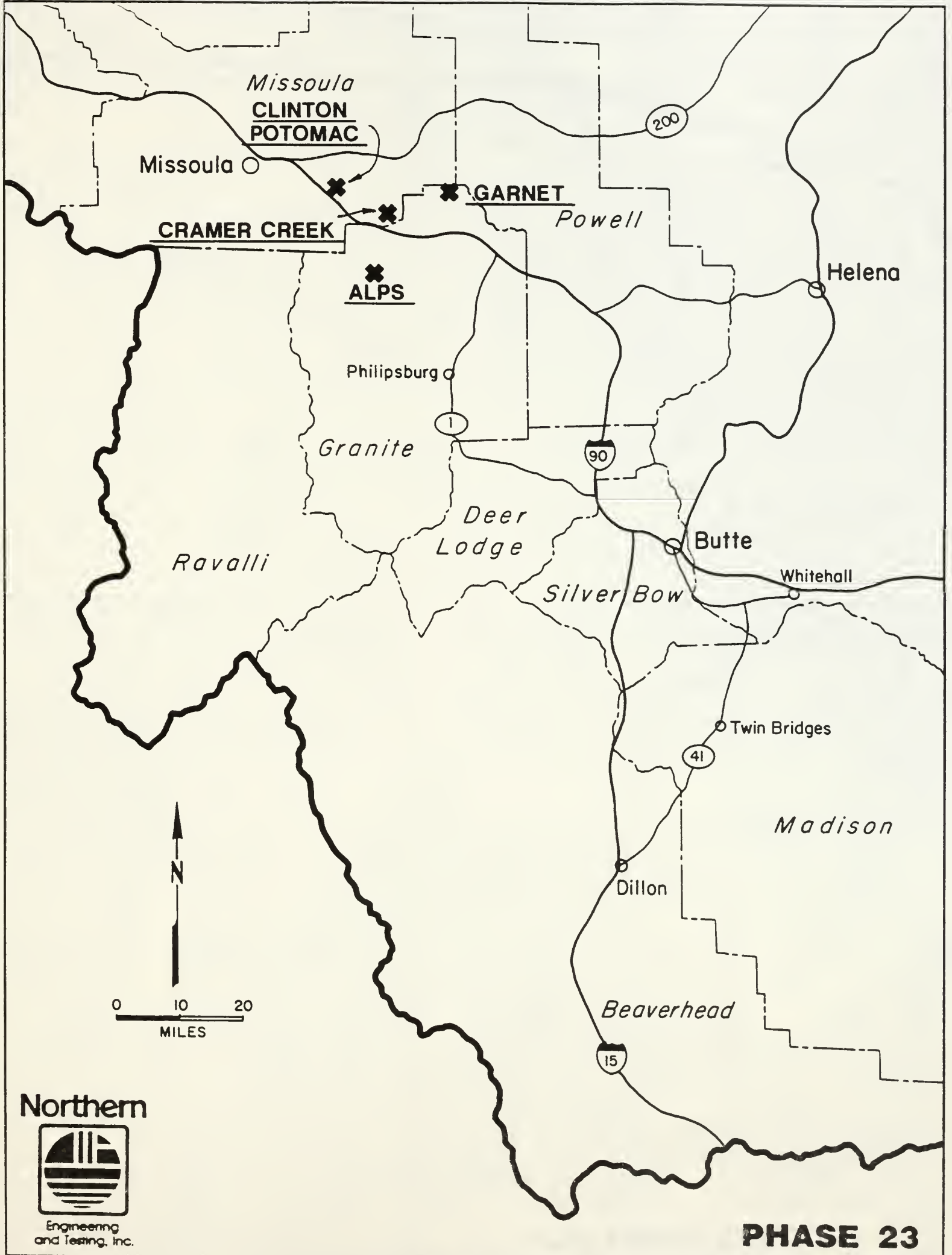
5.0 SLIDES

Before, during and post-construction slides were taken of each opening. These slides and a slide log are contained in Appendix C.

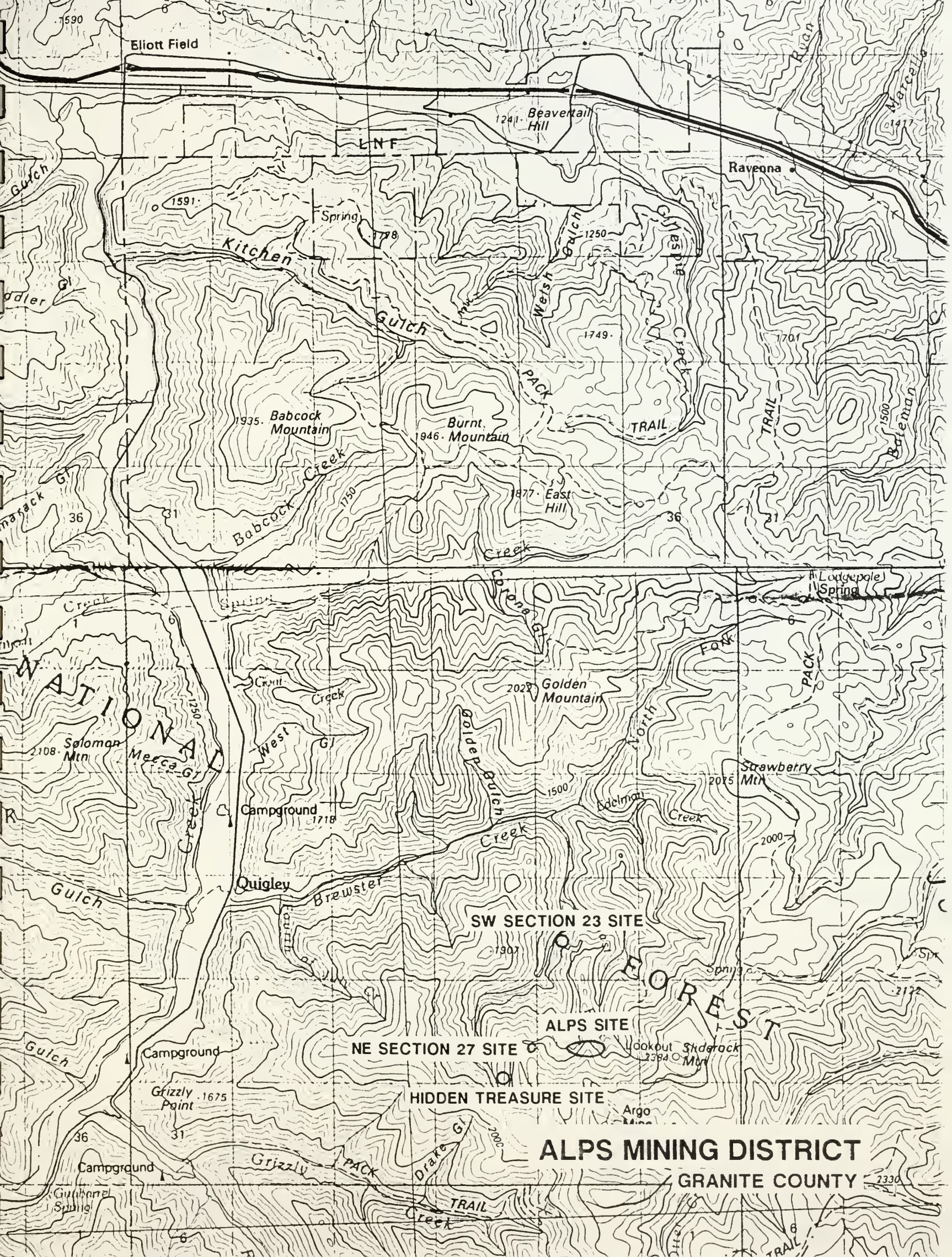
APPENDIX A
VICINITY AND SITE MAPS

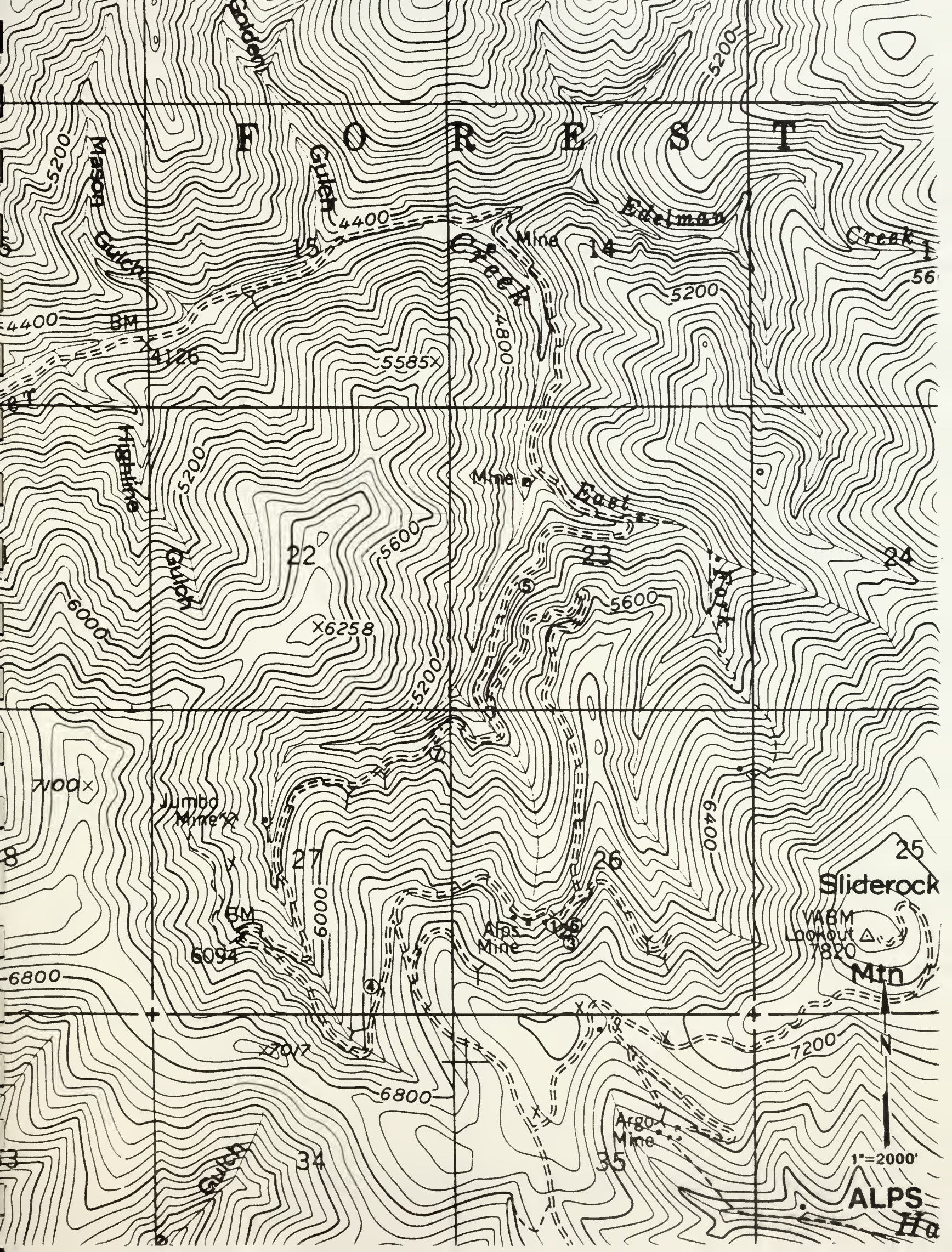


GARNET MINING DISTRICT
GRANITE COUNTY



HAZARDOUS MINE OPENING PROJECT





FOREST

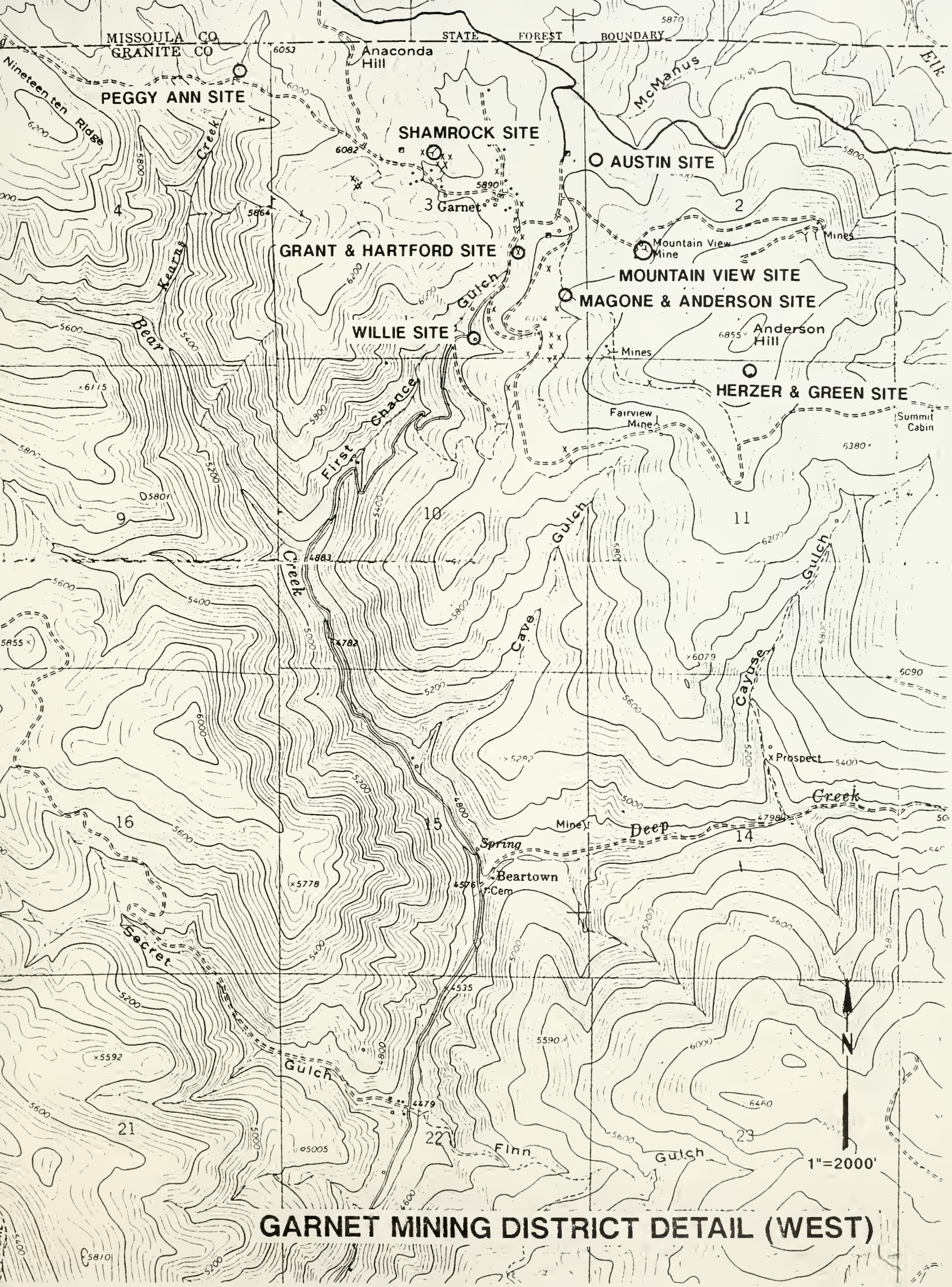
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VABM
Lookout
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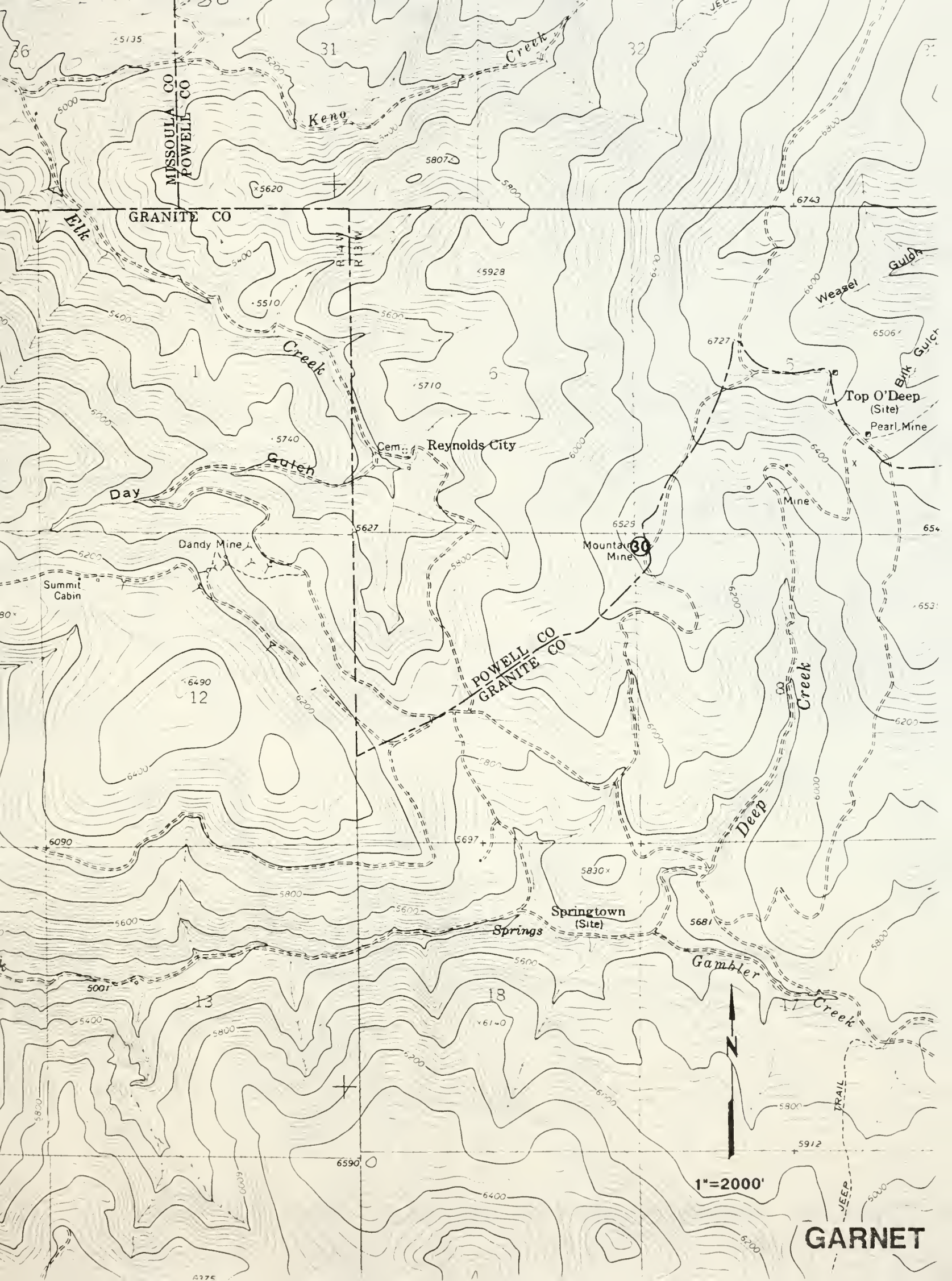
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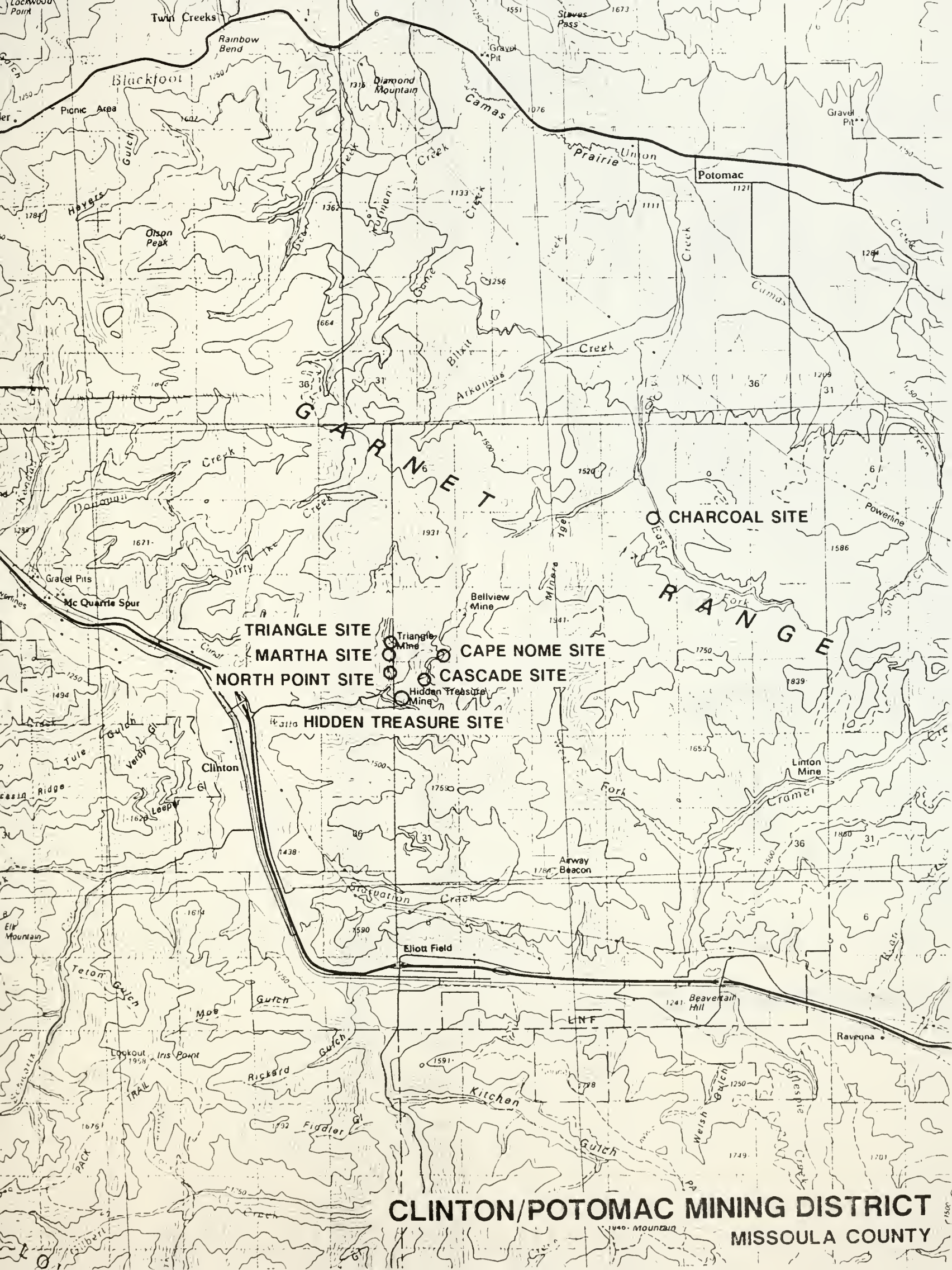
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GARNET MINING DISTRICT DETAIL (WEST)



GARNET

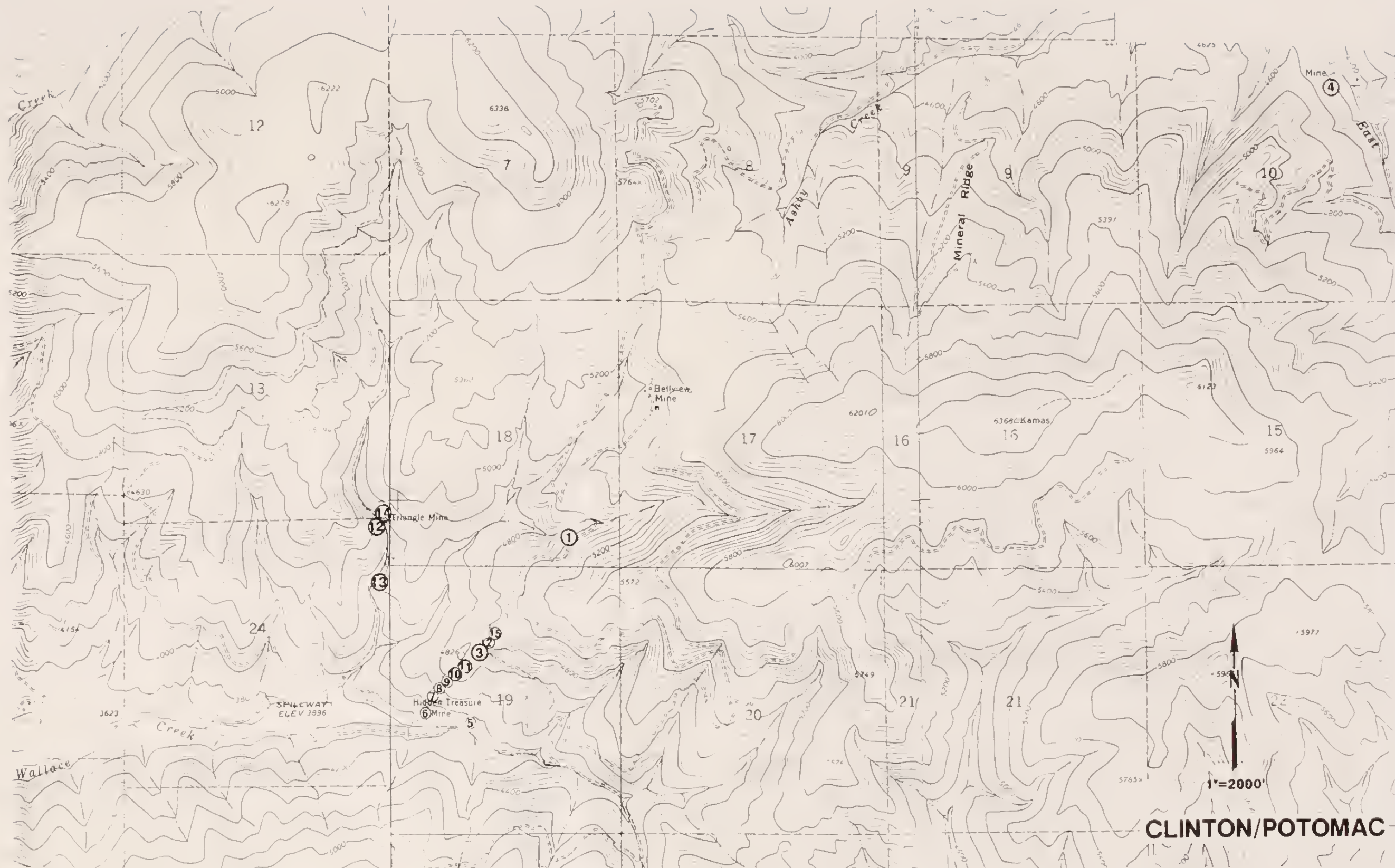


CLINTON/POTOMAC MINING DISTRICT
MISSOULA COUNTY

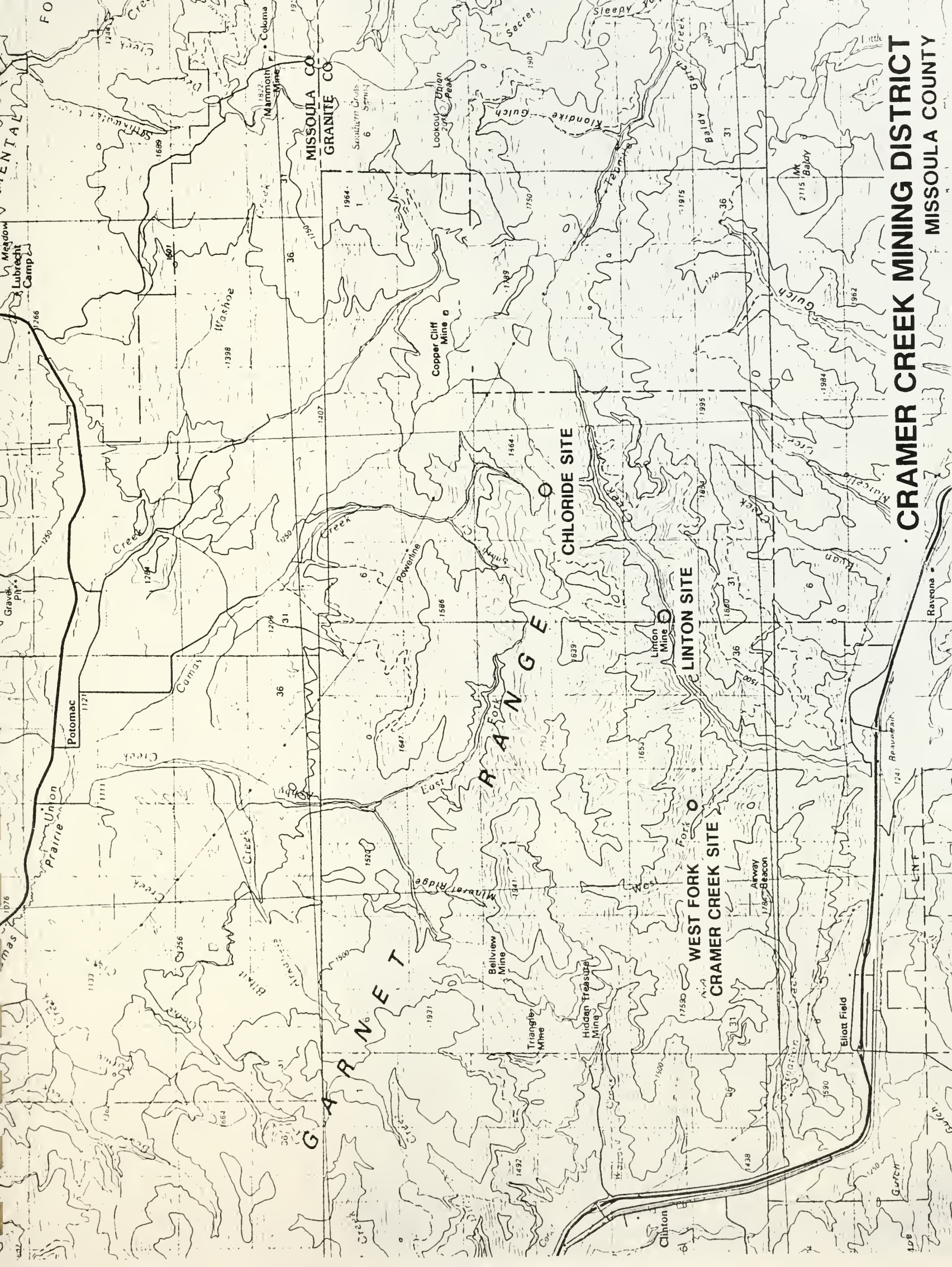
- TRIANGLE SITE
- MARTHA SITE
- NORTH POINT SITE
- HIDDEN TREASURE SITE
- CAPE NOME SITE
- CASCADE SITE

CHARCOAL SITE

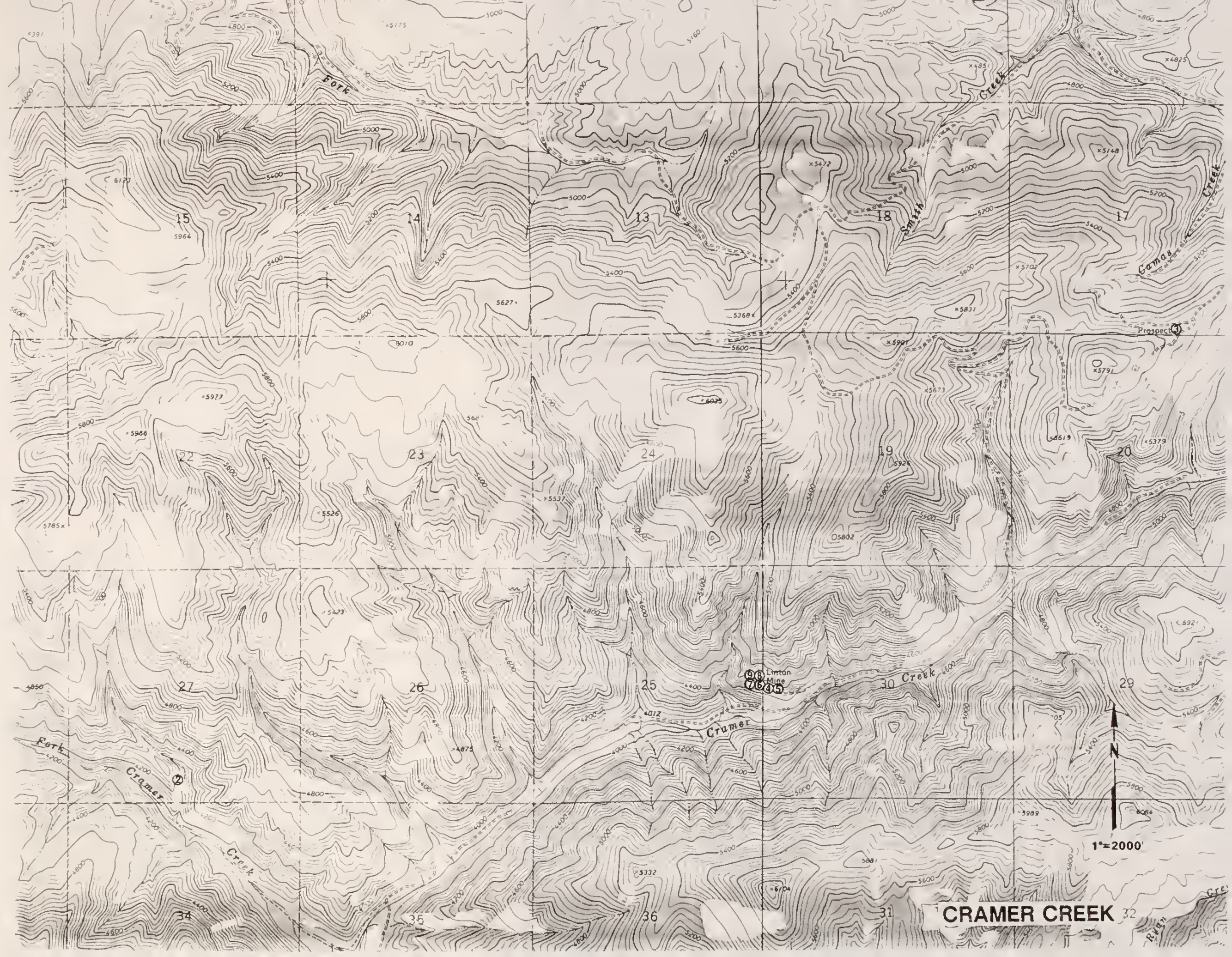
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860, 859, 858, 857, 856, 855, 854, 853, 852, 851, 850, 849, 848, 847, 846, 845, 844, 843, 842, 841, 840, 839, 838, 837, 836, 835, 834, 833, 832, 831, 830, 829, 828, 827, 826, 825, 824, 823, 822, 821, 820, 819, 818, 817, 816, 815, 814, 813, 812, 811, 810, 809, 808, 807, 806, 805, 804, 803, 802, 801, 800, 799, 798, 797, 796, 795, 794, 793, 792, 791, 790, 789, 788, 787, 786, 785, 784, 783, 782, 781, 780, 779, 778, 777, 776, 775, 774, 773, 772, 771, 770, 769, 768, 767, 766, 765, 764, 763, 762, 761, 760, 759, 758, 757, 756, 755, 754, 753, 752, 751, 750, 749, 748, 747, 746, 745, 744, 743, 742, 741, 740, 739, 738, 737, 736, 735, 734, 733, 732, 731, 730, 729, 728, 727, 726, 725, 724, 723, 722, 721, 720, 719, 718, 717, 716, 715, 714, 713, 712, 711, 710, 709, 708, 707, 706, 705, 704, 703, 702, 701, 700, 699, 698, 697, 696, 695, 694, 693, 692, 691, 690, 689, 688, 687, 686, 685, 684, 683, 682, 681, 680, 679, 678, 677, 676, 675, 674, 673, 672, 671, 670, 669, 668, 667, 666, 665, 664, 663, 662, 661, 660, 659, 658, 657, 656, 655, 654, 653, 652, 651, 650, 649, 648, 647, 646, 645, 644, 643, 642, 641, 640, 639, 638, 637, 636, 635, 634, 633, 632, 631, 630, 629, 628, 627, 626, 625, 624, 623, 622, 621, 620, 619, 618, 617, 616, 615, 614, 613, 612, 611, 610, 609, 608, 607, 606, 605, 604, 603, 602, 601, 600, 599, 598, 597, 596, 595, 594, 593, 592, 591, 590, 589, 588, 587, 586, 585, 584, 583, 582, 581, 580, 579, 578, 577, 576, 575, 574, 573, 572, 571, 570, 569, 568, 567, 566, 565, 564, 563, 562, 561, 560, 559, 558, 557, 556, 555, 554, 553, 552, 551, 550, 549, 548, 547, 546, 545, 544, 543, 542, 541, 540, 539, 538, 537, 536, 535, 534, 533, 532, 531, 530, 529, 528, 527, 526, 525, 524, 523, 522, 521, 520, 519, 518, 517, 516, 515, 514, 513, 512, 511, 510, 509, 508, 507, 506, 505, 504, 503, 502, 501, 500, 499, 498, 497, 496, 495, 494, 493, 492, 491, 490, 489, 488, 487, 486, 485, 484, 483, 482, 481, 480, 479, 478, 477, 476, 475, 474, 473, 472, 471, 470, 469, 468, 467, 466, 465, 464, 463, 462, 461, 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260, 259, 258, 257, 256, 255, 254, 253, 252, 251, 250, 249, 248, 247, 246, 245, 244, 243, 242, 241, 240, 239, 238, 237, 236, 235, 234, 233, 232, 231, 230, 229, 228, 227, 226, 225, 224, 223, 222, 221, 220, 219, 218, 217, 216, 215, 214, 213, 212, 211, 210, 209, 208, 207, 206, 205, 204, 203, 202, 201, 200, 199, 198, 197, 196, 195, 194, 193, 192, 191, 190, 189, 188, 187, 186, 185, 184, 183, 182, 181, 180, 179, 178, 177, 176, 175, 174, 173, 172, 171, 170, 169, 168, 167, 166, 165, 164, 163, 162, 161, 160, 159, 158, 157, 156, 155, 154, 153, 152, 151, 150, 149, 148, 147, 146, 145, 144, 143, 142, 141, 140, 139, 138, 137, 136, 135, 134, 133, 132, 131, 130, 129, 128, 127, 126, 125, 124, 123, 122, 121, 120, 119, 118, 117, 116, 115, 114, 113, 112, 111, 110, 109, 108, 107, 106, 105, 104, 103, 102, 101, 100, 99, 98, 97, 96, 95, 94, 93, 92, 91, 90, 89, 88, 87, 86, 85, 84, 83, 82, 81, 80, 79, 78, 77, 76, 75, 74, 73, 72, 71, 70, 69, 68, 67, 66, 65, 64, 63, 62, 61, 60, 59, 58, 57, 56, 55, 54, 53, 52, 51, 50, 49, 48, 47, 46, 45, 44, 43, 42, 41, 40, 39, 38, 37, 36, 35, 34, 33, 32, 31, 30, 29, 28, 27, 26, 25, 24, 23, 22, 21, 20, 19, 18, 17, 16, 15, 14, 13, 12, 11, 10, 9, 8, 7, 6, 5, 4, 3, 2, 1, 0.



CLINTON/POTOMAC



CRAMER CREEK MINING DISTRICT
MISSOULA COUNTY



APPENDIX B
FINAL PAY REQUEST AND CHANGE ORDERS

SECTION II

2.13 AFFIDAVIT ON BEHALF OF CONTRACTOR

STATE OF Montana

MONT A/E 88-46-113

COUNTY OF Lewis & Clark

DATE September 5, 1989

I certify to the best of my knowledge and belief that all work has been performed and materials supplied in strict conformance with the terms and conditions of the corresponding contract documents between Department of State Lands, the Owner, and Johnson Construction, the Contractor, dated October 12, 1988 for the Hazardous Mine Opening Project, Phase 23, Granite & Missoula Counties, Montana
(Project)

and further declare that all bills for materials, supplies, utilities, and for all other things furnished or caused to be furnished by the above-named Contractor and used in the execution of the above Contract have been fully paid, and there are no unpaid claims or demands of State Agencies, subcontractors, materialmen, mechanics, laborers or any others resulting from or arising out of work done or ordered to be done by said Contractor under the above-identified Contract.

In consideration of the prior and final payments made and all payments made for authorized changes, the Contractor releases and forever discharges the Owner from any and all obligations and liabilities arising by virtue of said Contract and authorized changes between the parties hereto, either verbal or in writing, and any and all claims and demands of every kind and character whatsoever against the Owner, arising out of or in any way relating to said Contract, and authorized changes.

This statement is made for the purpose of inducing the Owner to make Final Payment under the terms of the Contract, relying on the truth and statements contained therein.

Dated this 9 day of Sept., 1989, at Anaconda Montana.

CONTRACTOR:

Johnson Construction

By

[Signature]

Subscribed and sworn to before me this 8th day of September, 1989.

(SEAL)

[Signature]
Notary Public for the State of Montana
Residing at Anaconda, Montana
My commission expires September 15, 1990

SECTION II

2.13 AFFIDAVIT ON BEHALF OF CONTRACTOR

STATE OF Montana

MONT A/E 88-46-113

COUNTY OF Lewis & Clark

DATE September 5, 1989

I certify to the best of my knowledge and belief that all work has been performed and materials supplied in strict conformance with the terms and conditions of the corresponding contract documents between Department of State Lands, the Owner, and Johnson Construction, the Contractor, dated October 12, 1988 for the Hazardous Mine Opening Project, Phase 23, Granite & Missoula Counties, Montana
(Project)

and further declare that all bills for materials, supplies, utilities, and for all other things furnished or caused to be furnished by the above-named Contractor and used in the execution of the above Contract have been fully paid, and there are no unpaid claims or demands of State Agencies, subcontractors, materialmen, mechanics, laborers or any others resulting from or arising out of work done or ordered to be done by said Contractor under the above-identified Contract.

In consideration of the prior and final payments made and all payments made for authorized changes, the Contractor releases and forever discharges the Owner from any and all obligations and liabilities arising by virtue of said Contract and authorized changes between the parties hereto, either verbal or in writing, and any and all claims and demands of every kind and character whatsoever against the Owner, arising out of or in any way relating to said Contract, and authorized changes.

This statement is made for the purpose of inducing the Owner to make Final Payment under the terms of the Contract, relying on the truth and statements contained therein.

Dated this 9 day of Sept., 1989, at Anaconda Montana.

CONTRACTOR:

Johnson Construction

By

[Signature]

Subscribed and sworn to before me this 8th day of September, 1989.

(SEAL)

[Signature]
Notary Public for the State of Montana
Residing at Anaconda, Montana
My commission expires September 15, 1990

PAY REQUEST NO. 3
(FINAL PAY REQUEST)

FROM: July 10, 1989

TO: August 18, 1989

PROJECT NAME: Hazardous Mine Opening Project - Phase 23

LOCATION: Granite and Missoula Counties PROJECT NO.: Mont A/E 88-46-113

NAME OF CONTRACTOR: Johnson Const. ADDRESS: 3603 Lost Creek Road
Anaconda, MT 59711

SUMMARY OR PROJECT STATUS

Amount of Original Contract	\$41,050.00
Amount of Approved Change Order(s)	2,073.20
TOTAL CONTRACT AMOUNT	\$43,123.20
Contract Time Used to Date	57 days
Percentage of Contract Time Used	63%
Percentage of Contract Amount Earned	100%

Original Contract Amount Completed	\$36,168.00
Change Order(s) Amount Completed	6,955.20
Amount for Materials on Site	-0-
TOTAL To Date	43,123.20
Times 90% = \$38,810.88	
TOTAL AMOUNT Earned To Date	\$38,810.88
Less Previous Amount Earned	15,343.65
Plus Retainage for Contract Items 100% Complete	4,312.32
Amount Payable This Period	27,779.55
Less 1% Gross Receipts Tax	277.80
TOTAL DUE CONTRACTOR THIS PERIOD	\$27,501.75

Requested By: Johnson Const. Rich Johnson Date: 9/8/89
(Contractor)

Checked By: Chen-Northern, Inc. Jeremiah B. Bousier Date: 9/6/89
(Engineer)

Approved By: Department of State Lands James Marshall Date: 9/11/89
Abandoned Mine Reclamation Bureau (Owner)

PAY REQUEST NO. 3

CHEN-NORTHERN, INC.

PROJECT: Hazardous Mine Opening Project
Phase 23

MONT A/E 88-46-113

ITEMIZATION OF QUANTITIES AND COSTS

ITEM NO.	DESCRIPTION	ESTIMATED PLAN QUANTITY	UNIT BID PRICE	UNITS OF WORK COMPLETED THIS REQUEST	UNITS OF WORK COMPLETED TO DATE	TOTAL COST OF COMPLETED WORK
1	Mobilization	1.0 LS	3000.00	1.0	1.0LS	3,000.00
2	Backfilling Mine Openings	580 CY	10.00	22	492.6	4,926.00
3	Adit and Shaft Culverts	3	1000.00	0	3	3,000.00
4	Cable Net Mine Closure	12	1200.00	9	9	10,800.00
5	Steel Grate Systems	3	1000.00	1	2	2,000.00
6	Attaching Owner-Provided Signs	15	10.00	6	9	90.00
7	Farm Fence	800 LF	4.00	738	963	3,852.00
8	Miscellaneous Site Work	1.0 LS	8,500.00	1.0	1.0LS	<u>8,500.00</u>

TOTAL

\$36,168.00

**PAY REQUEST NO. 3
APPROVED CHANGE ORDERS
ITEMIZATION OF QUANTITIES AND COSTS**

ITEM NO.	DESCRIPTION	ESTIMATED PLAN QUANTITY	UNIT BID PRICE	UNITS OF WORK COMPLETED THIS REQUEST	UNITS OF WORK COMPLETED TO DATE	TOTAL COST OF COMPLETED WORK
1	Mobilization					
2	Backfilling Mine Openings		10.00			
	Change Order No. 1	35			35	350.00
	Change Order No. 2	73		73	73	730.00
	Change Order No. 3	<87.4>		<87.4>	<87.4>	<874.00>
3	Blasting/Collapsing Openings					
4	Adit and Shaft Culverts					
5	Cable Net Mine Closure		1200.00			
	Change Order No. 2	2		2	2	2400.00
	Change Order No. 3	<3>		<3>	<3>	<3600.00>
6	Steel Grate Systems		1000.00			
	Change Order No. 1	<1>		<1>	<1>	<1000.00>
	Change Order No. 3	1	787.20		Construct Grate	787.20
7	Masonry Adit Doors		1200.00			
	Change Order No. 3	1		1	1	1200.00
8	Attaching Owner-Provided Signs		10.00			
	Change Order No. 2	3		3	3	30.00
	Change Order No. 3	<6>		<6>	<6>	<60.00>
	Change Order No. 3	3		3	3	30.00
9	Farm Fence					
	Change Order No. 2	132		132	132	528.00
	Change Order No. 3	163		163	163	652.00
	Change Order No. 3	225		225	225	900.00
10	Miscellaneous Site Work					
	TOTAL					<u>2073.20</u>

RECEIVED

DEC 13 1988

2.12 CHANGE ORDER

Order No. 1 ~~STATE LANDS~~

Date: 11-7-88

Agreement Date: 10-24-88

NAME OF PROJECT: Hazardous Mine Opening Project - Phase 23; Granite and Missoula Counties, Montana Mont A/E 88-46-113

OWNER: Montana Department of State Lands

CONTRACTOR: Johnson Construction - Anaconda, Montana

Change Orders must be accompanied by an itemized cost breakdown. You are hereby requested to comply with the following changes from the Contract Documents. (Show separate costs for materials, labor, equipment, and miscellaneous. Show percent where applicable.)

ITEM NO.	DESCRIPTION OF CHANGES - ESTIMATED QUANTITIES & UNITS	COST OF CHANGES					TOTAL COST
		MATERIALS	LABOR	EQUIPMENT	MISCELLANEOUS	TOTAL UNIT COST	
2	Backfill Mine Openings Add: West Fork Cramer Creek #1	35 CYDS				10.00 c-y	350.00

TOTAL COST - MATERIALS, LABOR, EQUIPMENT & MISCELLANEOUS	350.00
OVERHEAD & PROFIT @ <u>Unit Price</u> %	
GRAND TOTAL - THIS CHANGE ORDER	350.00

Original Contract Price	41,050.00
Current Contract Price Adjusted by Previous Order	41,050.00
Cost This Change Order (+ or -)	350.00
New Contract Price Including This Change Order	41,400.00

The completion date as set forth in the Contract Documents shall be (unchanged, increased, decrease) by _____ calendar days.

The date for completion of all work will be _____.

Description and Justification for Change:

1. Two Hazardous openings (adits) were brought to the attention of the Project Inspector on 10-31-88 by Mr. Bob Storer of the Montana Department of State Lands Missoula office. One opening located on the West Fork of Cramer Creek (Site #1) is an 8' x 8' adit, is located on state land, and will require an estimated 35 cyds of backfill for reclamation. On 11-3-88 Ed Gensler of DSL Helena office instructed the inspector to backfill the Cramer Creek Site #1 opening. The 2nd opening mentioned is believed to be located on Champion International Land. Reclamation consent is still pending.

SURETY CONSENT

The Surety hereby consents to the aforementioned Contract Change Order and agrees that its bond or bonds shall apply and extend to the Contract as thereby modified or amended per this Change Order. The Principal and the Surety further agrees that on or after execution of this consent, the penalty of the applicable Performance Bond or Bonds is hereby increased by _____ (\$ _____) (100% of the Change Order amount) and the penalty of the application Payment Bond or Bonds is hereby increased by _____ (\$ _____) (100% of the Change Order amount).

COUNTERSIGNED BY MONTANA
SURETY
RESIDENT AGENT

By:

(Seal)

Recommended by: Jerome E. Brown, Engineer

Accepted by: John Const. Rich Johnson, Contractor

Approved by: CC 1 Susan McNeally, Owner

2.12 CHANGE ORDER

Order No. 2Date: 8-1-89Agreement Date: 10-24-88NAME OF PROJECT: Hazardous Mine Opening Project - Phase 23; Granite and Missoula Counties, Montana Mont A/E 88-46-113OWNER: Montana Department of State LandsCONTRACTOR: Johnson Construction - Anaconda, Montana

Change Orders must be accompanied by an itemized cost breakdown. You are hereby requested to comply with the following changes from the Contract Documents. (Show separate costs for materials, labor, equipment, and miscellaneous. Show percent where applicable.)

ITEM NO.	DESCRIPTION OF CHANGES - ESTIMATED QUANTITIES & UNITS	COST OF CHANGES					TOTAL COST
		MATERIALS	LABOR	EQUIPMENT	MISCELLANEOUS	TOTAL UNIT COST	
1	<u>Garnet District</u>						
	Magone/Anderson #29A						
	Add Backfill	73 cy				10.00	730.00
	Mountain #30						
2	Delete grate					1000.00	<1000.00>
	Add 132 L.F. fence					4.00 LF	528.00
	Add 3 "Owner-Provided" signs					10.00	30.00
	<u>Alps District</u>						
	Alps #6						
	Add Cable Net					1200.00	1200.00
	Alps #7						
	Add Cable Net					1200.00	1200.00

TOTAL COST - MATERIALS, LABOR, EQUIPMENT & MISCELLANEOUS

OVERHEAD & PROFIT @ Included %

GRAND TOTAL - THIS CHANGE ORDER

2,688.00Original Contract Price 41,050.00Current Contract Price Adjusted by Previous Order 41,400.00Cost This Change Order (+ or -) 2,688.00New Contract Price Including This Change Order 44,088.00

The completion date as set forth in the Contract Documents shall be (unchanged, increased, decrease) by _____ calendar days.

The date for completion of all work will be September 12, 1989.

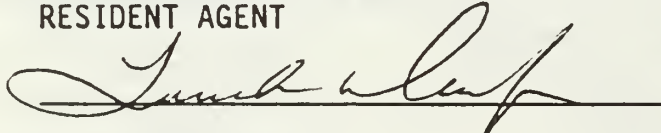
Description and Justification for Change:

1. Additional mine openings located by Project Inspector. Magone/Anderson 29A is adjacent to snowmobile route. Site is to be backfilled.
2. Mountain #30 was changed from a grate to fence at request of Mr. Ed Gensler, DSL representative.
3. Alps district sites located by project inspector. Consent form from owners to install cable nets is on file.

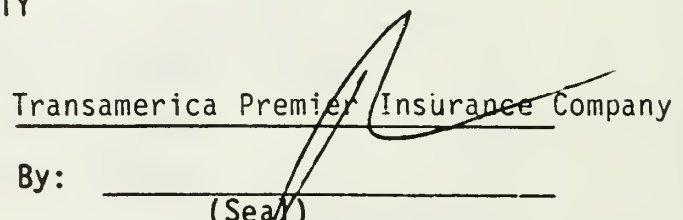
SURETY CONSENT

The Surety hereby consents to the aforementioned Contract Change Order and agrees that its bond or bonds shall apply and extend to the Contract as thereby modified or amended per this Change Order. The Principal and the Surety further agrees that on or after execution of this consent, the penalty of the applicable Performance Bond or Bonds is hereby increased by Three Thousand and Thirty-eight Dollars and no/100 (\$ 3,038.00) (100% of the Change Order amount) and the penalty of the application Payment Bond or Bonds is hereby increased by Three Thousand and Thirty-eight Dollars and no/100----- (\$ 3,038.00) (100% of the Change Order amount).

COUNTERSIGNED BY MONTANA
RESIDENT AGENT



SURETY


Transamerica Premier Insurance Company

By: _____

(Seal)

Thomas Sauer, Attorney-in-fact

Recommended by: Gerard B. Bowser Jr., Engineer

Accepted by: Ruth Johnson, Contractor

Approved by: Lang Brantell, Owner

2.12 CHANGE ORDER

Order No. 3

Date: 8-16-89

Agreement Date: 10-24-88

NAME OF PROJECT: Hazardous Mine Opening Project - Phase 23; Granite and Missoula Counties, Montana Mont A/E 88-46-113

OWNER: Montana Department of State Lands

CONTRACTOR: Johnson Construction - Anaconda, Montana

Change Orders must be accompanied by an itemized cost breakdown. You are hereby requested to comply with the following changes from the Contract Documents. (Show separate costs for materials, labor, equipment, and miscellaneous. Show percent where applicable.)

ITEM NO.	DESCRIPTION OF CHANGES - ESTIMATED QUANTITIES & UNITS	COST OF CHANGES					TOTAL COST
		MATERIALS	LABOR	EQUIPMENT	MISCELLANEOUS	TOTAL UNIT COST	
1	<u>Alps District</u> Hidden Treasure #4 Construct Specialty Gate 12 x 16 @ \$4.10 sq ft=192 sq ft						787.20
2	<u>Garnet District</u> Shamrock #39 Delete 63 cy backfill @ 10.00 cy						<630.00>
	Shamrock #45 Delete 19.1 cy						<191.00>
	Willie #47 Delete 5.3 cy						< 53.00>
3	<u>Clinton/Potomac District</u> Cape Nome Add adit door						1200.00
	Hidden Treasure Add 163 L.F. fence						652.00
	Delete 6 owner provided signs						< 60.00>
4	<u>Cramer Creek</u> Linton Delete 3 cable nets						<3600.00>
	Add 225 L.F. fence @ \$4.00 L.F.						900.00
	Add 3 owner provided signs						30.00
TOTAL COST - MATERIALS, LABOR, EQUIPMENT & MISCELLANEOUS					<964.80>		
OVERHEAD & PROFIT @ <u>Included</u> %							
GRAND TOTAL - THIS CHANGE ORDER					<964.80>		

Original Contract Price	41,050.00
Current Contract Price Adjusted by Previous Order	44,088.00
Cost This Change Order (+ or -)	<964.80>
New Contract Price Including This Change Order	43,123.20

The completion date as set forth in the Contract Documents shall be (unchanged, increased, decrease) by _____ calendar days.

The date for completion of all work will be September 12, 1989.

Description and Justification for Change:

1. ALPS DISTRICT

Access to site prevented use of pre-fabricated steel grate. Contractor agreed to fabricate 12" x 12" grate for \$4.10 sq ft.

2. GARNET DISTRICT

Garnet Mining Company, owner of the claims, indicated to project inspector that excavation of the claims would occur this year. Further work on the sites were deemed futile and deleted from the project.

3. CLINTON/POTOMAC DISTRICT

Installation of cable net at Cape Nome was deemed unsafe. Owner opted for an adit door which contractor agreed to fabricate and install for \$1200.00. One fence was erected around the Hidden Treasure site resulting in an increase of 163 L.F. over estimate.

4. CRAMER CREEK

Installation of cable nets was deemed unsafe.

SURETY CONSENT

The Surety hereby consents to the aforementioned Contract Change Order and agrees that its bond or bonds shall apply and extend to the Contract as thereby modified or amended per this Change Order. The Principal and the Surety further agrees that on or after execution of this consent, the penalty of the applicable Performance Bond or Bonds is hereby ~~increased by~~ decreased by Nine Hundred Sixty Four Dollars & 80/100 ----- (\$ 964.80) (100% of the Change Order amount) and the penalty of the application Payment Bond or Bonds is hereby ~~increased by~~ decreased by: Nine Hundred Sixty Four Dollars & 80/100 ----- (\$ 964.80) (100% of the Change Order amount).

COUNTERSIGNED BY MONTANA
RESIDENT AGENT

Cogswell Agency

SURETY

Transamerica Premier Insurance Co.

By: E.B. Cogswell

(Seal)

E.B. Cogswell Atty-In-Fact

Recommended by: Jeremiah B. Bowser, Engineer

Accepted by: Rich Johnson, Contractor

Approved by: E. B. Cogswell, Owner

APPENDIX C

SLIDES

PHASE 23 CONSTRUCTION SLIDE LOG

SLIDE NUMBER	DATE OF SLIDE	MINING DISTRICT	SITE NAME AND NUMBER	SLIDE SEQUENCE, VANTAGE POINT AND CONSTRUCTION OPERATION
1	6-17-87	Alps	Alps (1)	Before - 10' NW of opening
2	7-28-89	Alps	Alps (1)	Before - 15' NW of opening
3	7-28-89	Alps	Alps (1)	During - 15' W of opening
4	8-2-89	Alps	Alps (1)	After - 15' W of opening
5	6-17-87	Alps	Alps (2)	Before - 10' NW of opening
6	7-28-89	Alps	Alps (2)	During - 10' NW of opening
7	7-28-89	Alps	Alps (2)	During - 10' W of opening
8	8-2-89	Alps	Alps (2)	After - 10' NW of opening
9	6-17-87	Alps	Alps (3)	Before - 10' SW of opening
10	8-3-89	Alps	Alps (3)	After - 30' SW of opening
11	8-3-89	Alps	Alps (6)	During - 15' W of opening
12	8-3-89	Alps	Alps (6)	After - 15' W of opening
13	6-17-87	Alps	Hidden Treasure (4)	Before - 3' W of opening
14	6-17-87	Alps	Hidden Treasure (4)	Before - 3' N of opening
15	6-17-87	Alps	Hidden Treasure (4)	Before - 30' SW of opening
16	6-17-87	Alps	Hidden Treasure (4)	Before - 100' E of opening
17	8-7-89	Alps	Hidden Treasure (4)	During - 50' E of opening
18	8-7-89	Alps	Hidden Treasure (4)	During - 10' SW of opening
19	8-7-89	Alps	Hidden Treasure (4)	During - 100' E of opening
20	8-7-89	Alps	Hidden Treasure (4)	During - 3' S of opening
21	8-7-89	Alps	Hidden Treasure (4)	During - 5' S of opening
22	8-7-89	Alps	Hidden Treasure (4)	During - 5' SW of opening
23	8-7-89	Alps	Hidden Treasure (4)	After - 100' E of opening
24	8-7-89	Alps	Hidden Treasure (4)	After - 15' S of opening
25	8-7-89	Alps	Hidden Treasure (4)	After - 20' W of opening
26	8-7-89	Alps	Hidden Treasure (4)	After - 10' E of opening
27	8-8-89	Alps	NW Section 27 (7)	During - 10' W of opening
28	8-8-89	Alps	NW Section 27 (7)	During - 15' SW of opening
29	6-17-87	Alps	SW Section 23 (5)	Before - 15' NW of opening
30	6-17-87	Alps	SW Section 23 (5)	Before - inside opening
31	8-8-89	Alps	SW Section 23 (5)	After - 5' NW of opening
32	8-8-89	Alps	SW Section 23 (5)	After - 15' NW of opening
33	9-5-87	Garnet	Austin (3)	Before - 3' N of opening
34	9-5-87	Garnet	Austin (4)	Before - 5' N of opening
35	7-24-89	Garnet	Austin (3 & 4)	After - 50' S of opening
36	9-5-87	Garnet	Austin (5)	Before - 10' S of opening
37	10-24-88	Garnet	Austin (5)	During - 50' N of opening
38	7-24-88	Garnet	Austin (5)	After - 50' N of opening
39	8-25-87	Garnet	Grant & Hartford (20)	Before - 5' N of opening
40	7-19-89	Garnet	Grant & Hartford (20)	During - 10' N of opening
41	7-19-89	Garnet	Grant & Hartford (20)	After - 10' N of opening
42	8-25-87	Garnet	Herzer & Green (22)	Before - 50' E of opening
43	8-25-87	Garnet	Herzer & Green (22)	Before - 100' NE of opening
44	8-25-87	Garnet	Herzer & Green (22)	Before - 10' SE of opening
45	10-25-88	Garnet	Herzer & Green (22)	During - 50' E of opening
46	10-25-88	Garnet	Herzer & Green (22)	During - 100' NE of opening

PHASE 23 - CONSTRUCTION SLIDE LOG - (continued)

SLIDE NUMBER	DATE OF SLIDE	MINING DISTRICT	SITE NAME AND NUMBER	SLIDE SEQUENCE, VANTAGE POINT AND CONSTRUCTION OPERATION
47	7-21-89	Garnet	Herzer & Green (22)	After - 75' NE of opening
48	10-25-88	Garnet	Magone & Anderson (28)	During - 20' W of opening
49	7-10-89	Garnet	Magone & Anderson (28)	During - 10' W of opening
50	7-10-89	Garnet	Magone & Anderson (28)	During - 10' NW of opening
51	7-21-89	Garnet	Magone & Anderson (28)	After - 15' W of opening
52	7-21-89	Garnet	Magone & Anderson (28)	After - 5' W of opening
53	10-25-88	Garnet	Magone & Anderson (29)	During - 15' W of opening
54	7-21-89	Garnet	Magone & Anderson (29)	During - 5' W of opening
55	7-21-89	Garnet	Magone & Anderson (29)	After - 15' S of opening
56	7-21-89	Garnet	Magone & Anderson (29)	After - 15' S of opening
57	7-21-89	Garnet	Magone & Anderson (29A)	After - 10' W of opening
58	7-21-89	Garnet	Magone & Anderson (29A)	After - 15' N of opening
59	8-25-87	Garnet	Mountain (30)	Before - 100' W of opening
60	7-27-89	Garnet	Mountain (30)	During - 10' N of opening
61	7-27-89	Garnet	Mountain (30)	During - 20' SW of opening
62	7-27-89	Garnet	Mountain (30)	After - 50' S of opening
63	7-27-89	Garnet	Mountain (30)	After - 100' S of opening
64	10-25-89	Garnet	Mountain View (31)	During - 30' NW of opening
65	10-25-89	Garnet	Mountain View (31)	During - 10' W of opening
66	10-26-89	Garnet	Mountain View (31)	During - 30' NW of opening
67	10-26-89	Garnet	Mountain View (31)	During - 50' NW of opening
68	10-26-89	Garnet	Mountain View (31)	During - 75' W of opening
69	7-21-89	Garnet	Mountain View (31)	After - 40' W of opening
70	7-21-89	Garnet	Mountain View (31)	After - 40' NW of opening
71	9-5-83	Garnet	Mountain View (32)	Before - 5' NW of opening
72	7-13-89	Garnet	Mountain View (32)	During - 15' NW of opening
73	7-13-83	Garnet	Mountain View (32)	During - 15' NW of opening
74	7-13-89	Garnet	Mountain View (32)	After - 15' NW of opening
75	9-5-83	Garnet	Mountain View (33)	Before - 5' W of opening
76	7-13-89	Garnet	Mountain View (33)	During - 5' W of opening
77	9-5-87	Garnet	Peggy Ann (35)	Before - 14' S of opening
78	10-27-89	Garnet	Peggy Ann (35)	During - 30' SE of opening
79	10-27-89	Garnet	Peggy Ann (35)	During - 30' S of opening
80	10-27-89	Garnet	Peggy Ann (35)	During - 30' S of opening
81	10-27-89	Garnet	Peggy Ann (35)	During - 50' S of opening
82	7-10-89	Garnet	Peggy Ann (35)	During - 10' S of opening
83	7-10-89	Garnet	Peggy Ann (35)	During - 10' S of opening
84	7-21-89	Garnet	Peggy Ann (35)	After - 30' S of opening
85	9-5-87	Garnet	Shamrock (40)	Before - S' S of opening
86	10-26-88	Garnet	Shamrock (40)	During - 10' S opening
87	10-26-88	Garnet	Shamrock (40)	During - 25' S opening
88	10-26-88	Garnet	Shamrock (40)	During - 10' S opening
89	9-5-87	Garnet	Shamrock (41)	Before - 10' S opening
90	10-26-88	Garnet	Shamrock (41)	During - 30' S opening
91	9-5-87	Garnet	Shamrock (42)	Before - 10' SW opening
92	10-26-88	Garnet	Shamrock (42)	During - 25' S opening
93	9-5-87	Garnet	Shamrock (43)	After - 25' SW opening

PHASE 23 - CONSTRUCTION SLIDE LOG - (continued)

SLIDE NUMBER	DATE OF SLIDE	MINING DISTRICT	SITE NAME AND NUMBER	SLIDE SEQUENCE, VANTAGE POINT AND CONSTRUCTION OPERATION
94	9-5-87	Garnet	Shamrock (43)	Before - 10' S opening
95	10-26-88	Garnet	Shamrock (43)	After - 25' S opening
96	9-5-87	Garnet	Shamrock (44)	Before - 10' NE opening
97	10-26-88	Garnet	Shamrock (44)	After - 30' NW opening
98	9-5-87	Garnet	Shamrock (45)	Before - 50' SW opening
99	10-26-88	Garnet	Shamrock (46)	After - 50' SW of opening
100	6-18-87	Clinton/Potomac	Cape Nome (1)	Before - 150' W of opening
101	6-18-87	Clinton/Potomac	Cape Nome (1)	Before - 15' W of opening
102	6-18-87	Clinton/Potomac	Cape Nome (1)	Before - 5' W of opening
103	8-15-88	Clinton/Potomac	Cape Nome (1)	After - 5' W of opening
104	6-18-87	Clinton/Potomac	Cascade (2)	Before - 10' NE of opening
105	6-18-87	Clinton/Potomac	Cascade (2)	Before - 150' NW of opening
106	6-18-87	Clinton/Potomac	Cascade (15)	Before - 10' NE of opening
107	6-18-87	Clinton/Potomac	Cascade (15)	Before - 15' NW of opening
108	10-31-88	Clinton/Potomac	Cascade (2)	During - 30' E of opening
109	10-31-88	Clinton/Potomac	Cascade (2 & 15)	After - 50' W of opening
110	6-18-87	Clinton/Potomac	Charcoal (4)	Before - 100' E of opening
111	6-18-87	Clinton/Potomac	Charcoal (4)	Before - 100' S of opening
112	6-18-87	Clinton/Potomac	Charcoal (4)	Before - 5' E of opening
113	6-18-87	Clinton/Potomac	Charcoal (4)	Before - 5' S of opening
114	6-18-87	Clinton/Potomac	Charcoal (4)	Before - 10' SE of opening
115	6-18-87	Clinton/Potomac	Charcoal (4)	Before - 10' SW of opening
116	10-31-88	Clinton/Potomac	Charcoal (4)	After - 30' SW of opening
117	10-31-88	Clinton/Potomac	Charcoal (4)	After - 50' N of opening
118	10-31-88	Clinton/Potomac	Charcoal (4)	After - 50' S of opening
119	8-15-89	Clinton/Potomac	Charcoal (4)	After - 5' SW of opening
120	8-15-89	Clinton/Potomac	Charcoal (4)	After - 15' E of opening
121	8-15-89	Clinton/Potomac	Charcoal (4)	After - 30' SW of opening
122	10-31-88	Clinton/Potomac	Hidden Treasure (5)	During - 15' SE of opening
123	6-18-87	Clinton/Potomac	Hidden Treasure (6)	Before - 10' S of opening
124	8-15-89	Clinton/Potomac	Hidden Treasure (6)	After - 5' SE of opening
125	6-18-87	Clinton/Potomac	Hidden Treasure (7-11)	Before - 5' S of opening
126	6-18-87	Clinton/Potomac	Hidden Treasure (7-11)	Before - 15' S of opening
127	6-18-87	Clinton/Potomac	Hidden Treasure (7-11)	Before - 20' N of stope opening
128	6-18-87	Clinton/Potomac	Hidden Treasure (7-11)	Before - 20' N of stope opening
129	6-18-87	Clinton/Potomac	Hidden Treasure (7-11)	Before - 5' N of opening
130	6-18-87	Clinton/Potomac	Hidden Treasure (7-11)	Before - 5' N of stope opening
131	6-18-87	Clinton/Potomac	Hidden Treasure (7-11)	Before - 10' S of opening
132	8-15-89	Clinton/Potomac	Hidden Treasure (7-11)	During - 15' E of SE corner
133	8-15-89	Clinton/Potomac	Hidden Treasure (7-11)	During - 5' E of E side
134	8-15-89	Clinton/Potomac	Hidden Treasure (7-11)	During - 10' S of E side
135	8-15-89	Clinton/Potomac	Hidden Treasure (7-11)	During - 5' NW of N end
136	8-16-89	Clinton/Potomac	Hidden Treasure (7-11)	During - 5' NE of NE corner
137	8-16-89	Clinton/Potomac	Hidden Treasure (7-11)	After - 50' S of S end
138	7-25-87	Clinton/Potomac	Martha (12)	Before - 10' E of opening
139	8-16-89	Clinton/Potomac	Martha (12)	After - 10' E of opening

PHASE 23 - CONSTRUCTION SLIDE LOG - (continued)

SLIDE NUMBER	DATE OF SLIDE	MINING DISTRICT	SITE NAME AND NUMBER	SLIDE SEQUENCE, VANTAGE POINT AND CONSTRUCTION OPERATION
140	7-25-87	Clinton/Potomac	North Point (13)	Before - 50' W of opening
141	7-25-87	Clinton/Potomac	North Point (13)	Before - 10' W of opening
142	8-16-89	Clinton/Potomac	North Point (13)	After - 10' W of opening
143	7-25-87	Clinton/Potomac	Triangle (14)	Before - 50' W of opening
144	7-25-87	Clinton/Potomac	Triangle (14)	Before - 75' SW of opening
145	7-25-87	Clinton/Potomac	Triangle (14)	Before - 15' W of opening
146	8-16-89	Clinton/Potomac	Triangle (14)	After - 20' W of opening
147	7-26-87	Cramer Creek	Chloride (3)	Before - 30' SW of opening
148	11-3-88	Cramer Creek	Chloride (3)	During - 50' SE of opening
149	11-3-88	Cramer Creek	Chloride (3)	During - 50' SE of opening
150	11-3-88	Cramer Creek	Chloride (3)	During - 20' SE of opening
151	11-3-88	Cramer Creek	Chloride (3)	After - 15' SE of opening
152	7-26-87	Cramer Creek	Chloride (3)	Before - 3' E of opening
153	7-26-87	Cramer Creek	Chloride (3)	Before - 3' S of opening
154	7-26-87	Cramer Creek	Linton (4 & 5)	Before - 50' W of opening
155	7-26-87	Cramer Creek	Linton (4 & 5)	Before - 10' S of opening
156	7-26-87	Cramer Creek	Linton (4 & 5)	Before - 5' S of opening
157	7-26-87	Cramer Creek	Linton (4 & 5)	Before - 50' SE of opening
158	7-26-87	Cramer Creek	Linton (4 & 5)	Before - 20' E of opening
159	7-26-87	Cramer Creek	Linton (4 & 5)	Before - 30' E of opening
160	11-7-88	Cramer Creek	Linton (4 & 5)	After - 50' W of opening
161	11-7-88	Cramer Creek	Linton (4 & 5)	After - 20' SE of fence
162	11-7-88	Cramer Creek	Linton (4 & 5)	After - 10' E of fence
163	11-7-88	Cramer Creek	Linton (4 & 5)	After - 10' SE of fence
164	11-8-88	Cramer Creek	Linton (6 & 9)	During - 20' E of barricade
165	11-8-88	Cramer Creek	Linton (6 & 9)	During - 5' S of barricade
166	11-8-88	Cramer Creek	Linton (6 & 9)	During - 10' S of barricade
167	8-15-89	Cramer Creek	Linton (6 & 9)	After - 10' S of barricade
168	11-3-88	Cramer Creek	W Fk Cramer Creek (2)	Before - 50' SE of opening
169	11-3-88	Cramer Creek	W Fk Cramer Creek (2)	During - 30' S of opening
170	11-3-88	Cramer Creek	W Fk Cramer Creek (2)	During - 30' S of opening
171	11-3-88	Cramer Creek	W Fk Cramer Creek (2)	After - 50' S of opening

